

Baltimore, 26th, a thunder-storm, with heavy rain at intervals, prevailed from 3.10 to 8.15 p. m. Buildings were struck by lightning and considerable damage done by the flood. At the same time at New York the crops were suffering from a severe and protracted drought. At Washington City only light thunder showers occurred.

XII. [not charted].—During the night of the 28th the pressure was below the normal in all districts east of the Rocky mountains, but the greatest depression below the normal was observed in the northwest and from the Saint Lawrence valley to Georgia; these conditions continued on the 29th, with the depression never apparent on the Atlantic coast. In the northern portion of the upper Mississippi valley very heavy rain fell during the 29th, with winds reaching a hurricane violence in the vicinity of Dubuque, Iowa, Saint Paul and Moorhead, Minnesota, Fort Totten, Dakota, and many destructive hail storms occurred. During the 30th the depression was most decided near the Atlantic coast, with resulting brisk winds. It was during this period of undecided conditions that extreme heat prevailed over the entire country east of the Rocky mountains, being, however, most intense in the upper Mississippi and Missouri valleys, the extreme northwest and the northern plateau region.

XIII. [not charted].—On the 1st, on the west margin of high number 1, a depression overlay the Rocky mountain region; an extension of this depression to the eastward caused steep gradients in Kansas. It appeared to extend eastward in a tongue shape over Kansas and the Indian Territory, which conditions continued, and on the 3d a local depression formed over the Ozark mountains in Arkansas and southern Missouri. The following remarkable rainfalls may be attributed to this phenomenon: Lamar, Missouri, severe southeast rain-storm began on evening of the 1st, continuing till noon of 2d, amount, 1.83. Heavy southeast thunder-storm began about 6 p. m. of 2d, continuing till after midnight. From 6.40 p. m., 3d, till 4 a. m., 4th, 4.44 inches of rain fell. The total of 6.27 inches fell in thirty-three consecutive hours, causing washouts on railroads and carrying away bridges. A train and bridge were washed away with the loss of three lives. Thunder-storms with rain also occurred on the 4th after heavy rain, and also on the 5th.

Fort Concho, Texas, 5th, a sand storm and hail and heavy rain storm occurred. Thunder-storms were frequent in the middle slope and west Gulf states during the period of this disturbance. Heavy rain also fell at time of severe storm in southeastern Kansas, and all rivers were flooded, which affected the Arkansas at Fort Smith the 5th, and rose till the 7th, when highest. At Little Rock the river began rising the 7th, rising rapidly on the 8th, continuing till the p. m. of the 10th.

NORTH ATLANTIC STORMS DURING JULY, 1885.

[Pressure expressed in inches and in millimetres; wind-force by scale of 0-10.]

The paths of the depressions that have appeared over the north Atlantic ocean during the month have been determined, approximately, from international simultaneous observations furnished by captains of ocean steamships and sailing vessels; abstracts of ships' logs and other data collected by the Signal Service agencies at the ports of New York, Boston, and Philadelphia; reports furnished through the co-operation of the "New York Herald Weather Service," ships' logs furnished by the proprietors of the "New York Maritime Register," and from other miscellaneous data received at this office up to August 21, 1885.

Of the six depressions traced over the ocean, two, viz., numbers 3 and 4, were apparently continuations of disturbances which had previously traversed the north American continent, but neither of these appears to have reached the European coasts. The depressions charted were mostly unimportant and of slight intensity, the greatest force of wind rarely exceeding that of a fresh gale.

During the first five days of the month the atmospheric pressure over the ocean remained generally high, ranging from

about 29.9 (759.4), on the Banks of Newfoundland, to 30.3 (769.6), between the meridians of 40° and 20° W. On the 6th a decrease of pressure set in over the region north of 50° N., and between 40° W. and the British coast, and continued, causing moderate gales and unsettled weather until the 10th. On the 8th a disturbance, number 2, apparently developed near 40° N., 48° W., and this, during its passage eastward on the following days, caused a general diminution of the area of high pressures which occupied the ocean between 40° and 50° N. After the passage of the above depressions an increase of pressure set in and the area of barometric maxima gradually spread over the ocean, the pressure continuing greatest over mid-ocean and least on the Banks of Newfoundland. The passage of a depression which was moving north of the fiftieth parallel, during the 18th, 19th and 20th, caused another slight reduction of pressure, principally over the ocean west of 30° W., until the 24th, when the high area again began to spread westward and continued, with slight fluctuation, until the closing days of the month.

The report of Captain I. L. Delap, of the bark "Mistletoe," shows the weather over the Atlantic during July, 1885, to have been unusually moderate, while many other vessels reported generally pleasant weather. The "Mistletoe" was bound from New York to Dunkirk, France, and during July sailed between 40° and 50° N., and from 50° W. to the English channel. Captain Delap remarks as follows: "From the 1st to 10th had very moderate, variable winds and generally smooth sea; on the 10th the wind hauled from wsw. to e., and increased to a moderate gale, with heavy and continual rain for twenty-four hours. The balance of the month was the most uniform weather I ever experienced; moderate winds, calms, and occasional fogs; through the channel had easterly winds, at times strong. I have never experienced the same weather in July in twenty-five years, a large portion of which was spent in the north Atlantic."

The following are descriptions of the depressions charted:

1.—Prior to the 6th an area of high pressures appears to have occupied the ocean between W. 50° and the European coasts and to have extended northward to the fifty-fifth parallel; on that date, however, a decrease of pressure occurred over the region north of 47° N., indicating the presence of a centre of depression probably far to the northward. The storm-centre cannot be located at the present writing, owing to the scarcity of reports from the northeastern part of the Atlantic, but it apparently remained north of 55° until the 10th, when it passed to the north of Scotland. The s. s. "State of Nevada," J. A. Stewart, commanding, came under the influence of this disturbance during the period from the 5th to the 9th, and reported fresh w. and sw. winds, increasing to moderate gales with rainy weather and high confused sea, barometer falling to 29.54 (750.3), at 11 a. m. of the 6th, in N. 55° 20', W. 10° 0'. After rising to 29.76 (755.9) the barometer again fell to 29.54 (750.3), at 2 p. m. on the 7th, in N. 53° 45', W. 21° 0', and the wind suddenly shifted from wnw. to n. on the morning of the 9th. On the 7th the s. s. "Grecian," C. E. LeGallais, commanding, had barometer 29.46 (748.3), wind wnw., force 9, in N. 56° 45', W. 29° 30', and on the following day the same vessel, in N. 56° 24', W. 36° 3', had barometer 29.5 (749.3), wind wnw., force 6. On the 10th the bark "Jacob," A. Linder, commanding, in N. 60° 57', W. 14° 0', reported barometer 29.35 (745.5), wind sw., force 8, rainy and squally weather.

2.—This depression appeared on the 8th, near N. 40°, W. 47°, when the pressure in that neighborhood fell to 29.9 (759.4), being a decrease of about .4 inch since the preceding day. The disturbance moved slowly eastward, and on the 9th the lowest readings, about 29.6 (751.8), were shown near N. 41°, W. 45°. On the 10th the storm-centre was apparently to the northwestward of the Azores, causing moderate ne. to e. gales over the ocean between N. 40° and 46° and W. 30° and 40°; after this date the depression appears to have filled in, and an area of high barometer occupied the region between N. 40° and

50° on the 11th. The following reports refer to the passage of this depression: the s. s. "India," J. J. von Holdt, commanding, in N. 42° 0', W. 44° 37', at noon of the 8th had s. to se. winds of force 6 to 7, with rainy, threatening weather and falling barometer; at 9.45 p. m. the ship was struck by a heavy gale from nne. to n. and was obliged to run before the gale; the barometer fell to 29.7 (754.4), and at midnight the wind moderated and the barometer began to rise. On the 9th the s. s. "Catalonia," A. McKay, commanding, at 1 a. m., in N. 40° 52', W. 46° 16', had a heavy gale from sw. to wnw., with very fierce squalls, heavy rain, and confused sea; the gale lasted four hours, the barometer falling from 30.13 (765.3) to 29.67 (753.6). During the 9th and 10th the s. s. "Alexandria," W. Ramsay, commanding, had a gale beginning at s. and sw. and shifting suddenly to nw., with heavy rain; the lowest barometer, 29.7 (754.6), was observed at 1 a. m. on the 10th, in N. 40° 6', W. 38° 20'. The s. s. "Australia," A. McRitchie, commanding, reported fresh to moderate e. breeze, with heavy rain, on the early morning of the 8th; at 6 a. m., wind ene., strong breeze, and heavy rain; 8 a. m., calm and overcast, with high, confused sea; 10 a. m., wind s., moderate; noon (N. 40° 27', W. 47° 35'), increasing breeze; 3 p. m., moderate to fresh wsw. breeze; 8 p. m., fresh gale with heavy rain and high sea, barometer 29.62 (752.3); 10 p. m., wind w., fresh gale, heavy squalls, and vivid lightning in the south; wind backing to sw. and thence to sse.; midnight, strong s. gale. The 9th began with a strong s. gale, with rain and high, confused sea; at 2 a. m., wind se.; 4 a. m., strong breeze from ene., with hard squalls and heavy rain; 8 a. m., wind ene., moderate breeze, showery; noon (N. 41° 45', W. 42° 40'), barometer 29.75 (755.6), wind ene., fresh.

3.—This was probably a continuation of the depression described as number vii. under "Areas of low barometer." It reached the Gulf of Saint Lawrence on the night of the 17th, the barometer at Anticosti reading 29.58 (751.3) at the midnight report of that date. On the 18th the storm-centre passed over Newfoundland, and a general decrease of pressure set in over the ocean from the Banks of Newfoundland northeastward. During the 19th and 20th the disturbance moved northeastward north of the fiftieth parallel, causing strong sw. and w. breezes to moderate gales over the ocean between N. 50° and 45°, with pressure ranging from 29.6 (751.8) to 29.9 (759.4).

4.—This was a continuation of low area viii. described under "Areas of low barometer;" it passed into the Atlantic from the coast of Nova Scotia during the 21st, and on the 22d it was shown near, N. 42°, W. 58°, where the barometer read about 29.6 (751.8). On the 23d the depression was near N. 44°, W. 45°, with pressure unchanged, and by the following day it had apparently filled in. Strong breezes accompanied the passage of this depression, the only vessel reporting a gale being the s. s. "Catalonia," which reported: "a gale, lasting four hours, accompanied by heavy squalls, suddenly sprang up at 6 p. m. on the 22d, in N. 41° 45', W. 46° 38'; the wind veered from sw. through nw. to e. and then backed to ne.; heavy rain showers and confused sea; barometer falling from 29.95 (760.7) to 29.62 (752.3)."

5.—This depression appeared to the northeastward of Newfoundland on the 27th, with pressure below 29.8 (756.9), and causing strong breezes to moderate gales from s. and sw. over the Banks. It moved northeastward, with slightly decreased pressure, and on the 28th it was shown near N. 54°, W. 33°; on that date the s. s. "Siberian," R. P. Moore, commanding, in N. 56° 8', W. 34° 0', reported that the wind veered from sw. to s., and rapidly increased to a strong gale, accompanied by heavy rain and very confused sea, the barometer falling to 29.72 (754.9); at 6 p. m. the wind hauled gradually to w. and decreased to a moderate breeze. At 2.30 p. m. of the 29th the s. s. "Geiser," F. V. Schierbeck, commanding, had a moderate gale from se. by s. to nw., the lowest barometer reading being 30.0 (761.9), in N. 54° 14', W. 29° 17'. On the 29th the disturbance passed beyond the range of the observations.

6.—This depression appeared off the eastern edge of the Banks on the last day of the month; the pressure over the region between N. 45° and 50° and W. 40° and 45° had decreased to 29.6 (751.8), being a fall of about .5 inch, and the southerly winds had increased to the force of a gale. The s. s. "Waesland," J. Ueberweg, commanding, had a moderate gale from se., veering to s., sw. and wnw.; the lowest barometer reading, 29.83 (757.7), was observed at 2 p. m. on the 31st, in N. 44° 18', W. 42° 40'. The disturbance appears to have increased in energy as it moved eastward; the s. s. "Geiser," F. V. Schierbeck, commanding, reported a storm of force 10, during July 31st and August 1st; the gale began at sse., backed to e. by s., and then veered to se. and sw., and moderated at wsw.; the lowest barometer reading, 29.64 (752.8), occurred at 5.30 p. m. on the 31st, in N. 47° 44', W. 39° 10'. Captain Schierbeck remarks as follows: "This disturbance set in very suddenly, was accompanied by a heavy rainfall and had quite the appearance of a cyclone; the wind blew occasionally with great force, and the flying mist and spray made it impossible to see a ship's length ahead."

OCEAN ICE.

On chart i. are also shown the eastern and southern limits of the north Atlantic ice-region for July, 1885. These limits are determined from reports furnished by shipmasters, and from trustworthy data published in the "New York Maritime Register" and other newspapers.

In July, 1885, the easternmost icebergs were reported near the forty-fourth meridian and between the parallels of 48° and 50° N.; from N. 48°, W. 44° the eastern edge of the ice region extends south-southwestward to about N. 42° 30', W. 46° 12' (the southeasternmost berg). The southern limit of the ice region runs westward between N. 42° and 43° to about W. 50°, and thence northwestward to Cape Race. Numerous icebergs were reported in the Strait of Belle Isle, and from there eastward to about the forty-ninth meridian. In the southern part of the ice region they were most numerous between N. 42° 30' and 44°, and W. 49° and 52°.

A comparison with the chart for the preceding month (June, 1885), shows that the icebergs of the present month are considerably diminished in number and that the area of water covered by them is much smaller, the eastern limit being two and a half or three degrees to the west, and the southern limit about three degrees to the north of the corresponding limits for last month.

The following table shows the comparison between July, 1885, and the same month of the three preceding years:

Southern limit.			Eastern limit.		
Date.	Lat. N.	Lon. W.	Date.	Lat. N.	Lon. W.
July, 1882.....	40 00	49 00	July, 1882.....	40 00?	40 00
July, 1883.....	42 42	49 57	July, 1883.....	45 47	45 44
July, 1884.....	45 24	50 02	July, 1884.....	48 36	46 28
July, 1885.....	42 14	48 30	July, 1885.....	48 00	44 00

Icebergs were reported in July, 1885, as follows:

1st.—Bark "Iodine," off Ivigtut, Greenland, saw several small icebergs; ship "Bedford," in N. 44° 27', W. 49° 0', passed an iceberg.

2d.—S. S. "Suevia," in N. 42° 56', W. 49° 0', at 11.45 a. m., passed an iceberg; also, at 1.20 p. m., in N. 42° 50', W. 49° 24', passed two bergs.

4th.—S. S. "State of Alabama," in N. 48° 0', and between W. 44° and 46° 30', passed several icebergs; s. s. "Wyoming," in N. 43° 30', W. 50° 00', at 7.30 a. m., passed two icebergs.

5th.—S. S. "State of Alabama," in N. 45° 41', W. 49° 50', passed an iceberg; ship "Hermon," in N. 42° 40', W. 49° 2', passed three large icebergs; temperature of water 42°.

6th.—S. S. "Island," in N. 44° 30', W. 49° 16', passed a large iceberg and several pieces; temperature of air, 57° 2; water, 53° 6.

7th.—S. S. "City of Chester," in N. 42° 53', W. 51° 30', passed an iceberg four hundred feet high and six hundred feet long; temperature of air, 54°; water, 53°; bark "Iodine," in 51° 50', W. 48° 0', to N. 49° 25', W. 47° 0', on the 8th, passed several small icebergs.

8th.—S. S. "Celtic," in N. 44° 15', W. 49° 12', at 2.30 p. m., passed three small icebergs.

9th.—S. S. "Ethiopia," in N. 48° 14', W. 48° 55', at 3.15 p. m., passed an iceberg; s. s. "Ontario" passed several large icebergs in Belle Isle Strait; also, three small icebergs about one hundred and eighty-six miles east of Belle Isle.

10th.—S. S. "Siberian," when in the Strait of Belle Isle, passed several icebergs between Point Amour and Cape Norman; from Cape Norman to Belle Isle she passed twenty-seven bergs, some of which were very large.

11th.—S. S. "Hibernian," in N. 43° 30', W. 49° 40', passed a moderate-sized iceberg; s. s. "Bothnia," in N. 43° 18', W. 49° 36', passed a large iceberg; also another about seven miles west of the first; in N. 43° 18', W. 51° 12', passed another; bark "J. P. A.," in N. 42° 26', W. 50° 40', passed an iceberg about two hundred and fifty feet high and ten miles long; s. s. "Siberian," between Belle Isle and N. 53° 20', W. 48° 50', passed numerous icebergs; s. s. "Circassian" passed numerous icebergs from Belle Isle to about one hundred and eighty miles east of that island.

12th.—S. S. "Fulda," in N. 42° 29', W. 50° 8', passed a small iceberg; s. s. "Main," in N. 48° 1', W. 44° 23', passed a small iceberg.

15th.—S. S. "Assyrian Monarch," passed a small iceberg twenty miles southwest of Cape Race; s. s. "Adriatic," in N. 44° 55', W. 48° 56', passed a large iceberg; also passed another, with several small pieces, in N. 44° 53', W. 49° 5'; s. s. "Furnessia," in N. 47° 50', W. 45° 30', at 3.15 p. m., passed an iceberg; at 7.15 p. m., in N. 47° 40', W. 46° 0', passed another.

16th.—S. S. "Samaria," in N. 43° 3', W. 49° 37', passed a large iceberg; s. s. "Venetian," in N. 43° 8', W. 51° 25', passed a large iceberg—a solid mass about two hundred feet high, five hundred feet long, and four hundred feet wide; also saw a small berg about three miles north.

17th.—S. S. "State of Pennsylvania," in N. 48° 16', W. 44° 17', passed a large iceberg about ten miles south of ship.

18th.—S. S. "Nevada," in N. 43° 52', W. 51° 56', passed a large iceberg apparently aground; s. s. "Roman," in N. 42° 41', W. 50° 10', at 9.30 p. m., passed two large icebergs.

19th.—S. S. "Elysia," in N. 43° 2', W. 49° 30', at 2.30 p. m., passed a large iceberg; at 4.45 p. m., in N. 43° 0', W. 50° 0', passed another with several small bergs near it.

21st.—S. S. "Indipendente," in N. 42° 50', W. 50° 22', passed five large icebergs.

22d.—S. S. "Britannic," in N. 42° 50', W. 49° 56', at 3.45 p. m., passed a small iceberg; at 4.45 p. m., in N. 42° 45', W. 50° 16', passed one large berg and several pieces; s. s. "Scythia," in N. 43° 03', W. 50° 39', at 4.50 a. m., passed a large iceberg; at 6 a. m., passed a medium-sized berg in N. 43° 02', W. 51° 05'.

23d.—S. S. "Etruria," in N. 42° 21', W. 48° 48', at 12 m., passed a medium-sized iceberg; at 1.45 p. m., passed another in N. 42° 17', W. 49° 09'; s. s. "Nessmore," in N. 42° 14', W. 49° 30', passed an iceberg, air, 50°, water, 44°; in N. 42° 18', W. 49° 00', passed another, with small pieces near it.

24th.—S. S. "Waldensian," in N. 48° 55', W. 44° 09', passed a small iceberg; in N. 48° 48' to 44° 33' passed one large and several small bergs; in N. 47° 45', W. 46° 22', passed a medium-sized berg; s. s. "Jane Breydel," in N. 42° 55', W. 49° 50', at 6 p. m., passed an iceberg, also passed another at 10 p. m., in N. 42° 53', W. 50° 51'; s. s. "State of Georgia," in N. 48° 21', W. 49° 33', sighted an iceberg about fifteen miles north of ship's position; s. s. "Rugia," in N. 43° 15', W. 53° 15', at 5 a. m., passed an iceberg from two to three hundred feet high.

25th.—Bark "Abel," in N. 43° 30', W. 48° 54', passed several icebergs, one about three hundred feet high; s. s. "Iowa,"

in N. 42° 55', W. 50° 2', at 8.30 p. m., passed a medium-sized iceberg; s. s. "Canada," (Fr.) in N. 43° 17', W. 51° 6', passed a large iceberg about three hundred feet high and six hundred feet long.

26th.—S. S. "Iowa," in N. 42° 53', W. 51° 4', at 12.30 a. m., passed a large iceberg.

29th.—S. S. "Circassian," passed twelve icebergs from one hundred and forty miles east of, to, Belle Isle.

30th.—S. S. "Anchoria," in N. 49° 33', W. 44° 5', at 11 a. m., passed two small icebergs; s. s. "Siberian," in N. 53° 9', W. 49° 22', passed an iceberg.

31st.—S. S. "Siberian," in N. 52° 35', W. 52° 15', passed a large iceberg; s. s. "Rhaetia," in N. 42° 34', W. 46° 12', at 12.25 p. m., passed a small iceberg.

The following data are taken from the "Atlantic Ice Reports" of the INTERNATIONAL NAUTICAL MAGAZINE:

1st.—S. S. "Norseman," in N. 44° 29', W. 48° 22', passed some small pieces of ice.

2d.—Bark "Carl Haasted," in N. 43° 0', W. 51° 0', passed one small iceberg.

4th.—Bark "Hugo," in N. 43° 0', W. 52° 25', passed three small icebergs and some small pieces.

6th.—S. S. "Zaandam," in N. 43° 23', W. 49° 37', passed three small icebergs.

7th.—S. S. "Westphalia," in N. 42° 32', W. 50° 53', at 11 a. m., passed a large iceberg about one hundred and fifty feet high; at 1 p. m., in N. 42° 28', W. 51° 33', passed a berg about two hundred feet high.

8th.—Bark "Drowning Louise," in N. 43° 0', W. 49° 30', passed three large icebergs.

9th.—Bark "Drowning Louise," in N. 42° 48', W. 50° 50', sighted two large icebergs.

13th.—S. S. "Tower Hill," in N. 45° 18', W. 48° 52', at 4 p. m., passed an iceberg.

15th.—S. S. "Fitzroy," in N. 43° 27', W. 49° 57', passed two medium-sized icebergs.

17th.—S. S. "Llandaff City," in N. 45° 14', W. 49° 21', at 10 a. m., passed a medium-sized iceberg.

18th.—S. S. "St. Simon," in N. 43° 0', W. 52° 0', at 5.20 a. m., passed an iceberg about one hundred and twenty feet high and half a mile long.

19th.—S. S. "Katie," in N. 43° 13', W. 51° 10', at 1.15 p. m., passed an iceberg about one hundred and eighty feet high and two hundred and fifty feet long; temperature of air, 58°; water, 58°. The s. s. "Edam," in N. 48° 28', W. 46° 0', passed an iceberg about two hundred feet high and four hundred feet long.

23d.—Bark "Annie J. Marshall," in N. 48° 47', W. 45° 30', passed five icebergs.

24th.—S. S. "Critic" sighted two small pieces of ice about five miles from Cape Race.

25th.—Ship "Mary Fraser," in N. 42° 36', W. 50° 0', passed two large icebergs.

29th.—Ship "Austria," in N. 43° 10', W. 52° 0', at 2 a. m., passed a large iceberg.

SIGNAL SERVICE AGENCIES.

Signal Service agencies have been established in the Maritime Exchange buildings at New York and Philadelphia, and in the Custom-House, Boston, where the necessary blanks and other information will be furnished to ship-masters.

In pursuance of the arrangements made with the Meteorological Office of London, England, there were cabled to that office from New York during July, 1885, thirteen reports concerning storms and icebergs encountered by vessels in the Atlantic west of the forty-fifth meridian; seven messages were sent from Boston.

TEMPERATURE OF THE AIR.

[Expressed in degrees, Fahrenheit.]

The distribution of mean temperature over the United States and Canada is exhibited on chart ii. by the dotted isothermal lines; and in the table of miscellaneous meteorological data.